

TENTATIVE

TOSHIBA GATE TURN-OFF THYRISTOR

SG800GXH25

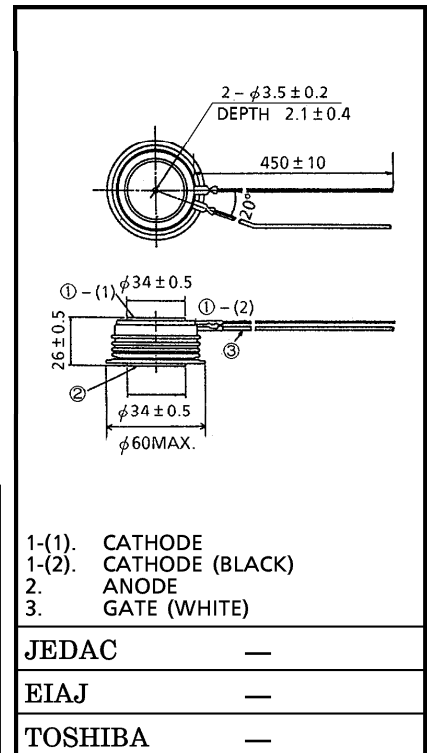
INVERTER APPLICATION

Unit in mm

- Repetitive Peak Off-State Voltage : $V_{DRM} = 4500 \text{ V}$
(Note 1)
- Repetitive Peak Reverse Voltage : $V_{RRM} = 4000 \text{ V}$
- R.M.S On-State Current : $I_T(\text{RMS}) = 300 \text{ A}$
- Peak Turn-Off Current : $I_{TGQM} = 800 \text{ A}$
- Critical Rate of Rise of On-State Current : $di/dt = 200 \text{ A}/\mu\text{s}$
- Critical Rate of Rise of Off-State Voltage : $dv/dt = 900 \text{ V}/\mu\text{s}$

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage (Note 1)	V_{DRM}	4500	V
Repetitive Peak Reverse Voltage	V_{RRM}	4000	V
Peak Turn-Off Current (Note 2)	I_{TGQM}	800	A
R.M.S On-State Current (Note 3)	$I_T(\text{RMS})$	300	A
Peak One Cycle Surge On-State Current (Non Repetitive, 10 ms- Width Half Sine Waveform)	I_{TSM}	4000 (50 Hz) 4400 (60 Hz)	A
Critical Rate of Rise of On-State Current (Note 4)	di/dt	200	A / μs
Peak Forward Gate Current	I_{FGM}	40	A
Average Gate Power Dissipation	$P_G(\text{AV})$	80	W
R.M.S Gate Current (Note 5)	$I_G(\text{RMS})$	42	A
Peak Reverse Gate Voltage (At Static)	V_{RGM}	15	V
Operation Junction Temperature Range	T_j	-40~115	°C
Storage Temperature Range	T_{stg}	-40~115	°C
Mounting Force	—	11.8 ± 1.2	kN



Weight : 460 g

(Note 1) : $V_{GK} = -2 \text{ V}$

(Note 2) : $V_D = 2400 \text{ V}$, $V_{DM} \leq 3000 \text{ V}$, $C_S \geq 2 \mu\text{F}$, $di_{GQ}/dt \geq 25 \text{ A}/\mu\text{s}$, $V_{DSP} \leq 600 \text{ V}$,
 $L_S \leq 0.2 \mu\text{H}$ (TOSHIBA METHOD)

(Note 3) : 50 Hz Half Sine Waveform

(Note 4) : $V_D \leq 2400 \text{ V}$, $I_{TM} \leq 800 \text{ A}$, $I_G \geq 12 \text{ A}$ ($t_r \leq 1 \mu\text{s}$), $f \leq 50 \text{ Hz}$, $C_S \leq 2 \mu\text{F}$,
 $R_S \geq 10 \Omega$, $25^\circ\text{C} \leq T_j \leq 115^\circ\text{C}$

(Note 5) : Ambient Temperature of coaxial gate-cathode lead = 90°C

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ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION		MIN	TYP.	MAX	UNIT
Repetitive Peak Off-State Current	I _{DRM}	V _{DRM} = 4500 V, V _{GK} = −2 V T _j = 115°C		—	—	50	mA
Repetitive Peak Reverse Current	I _{RRM}	V _{RRM} = 4000 V T _j = 115°C		—	—	50	mA
Repetitive Peak Reverse Gate Current	I _{RGM}	V _{RGM} = 15 V T _j = 115°C		—	—	10	mA
Peak On-State Voltage	V _{TM}	I _{TM} = 800 A, T _j = 115°C		—	—	4.7	V
Gate Trigger Voltage	V _{GT}	V _D = 24 V R _L = 0.2 Ω	T _j = −40°C	—	—	1.7	V
			T _j = 25°C	—	—	1.2	V
Gate Trigger Current	I _{GT}		T _j = −40°C	—	—	4.0	A
			T _j = 25°C	—	—	1.0	A
Turn-On Delay Time	t _d	V _D = 2250 V, I _{TM} = 800 A di _F / dt = 200 A / μs		—	—	2.0	μs
Turn-On Time	t _{gt}	I _{GM} = 12 A (t _r = 1 μs) T _j = 25°C, non-snubber		—	—	8.0	μs
Critical Rate of Rise of Off-State Voltage	dv / dt	V _{DRM} = 3000 V T _j = 115°C, V _{GK} = −4 V Exponential Rise		900	—	—	V / μs
Storage Time	t _s	I _{TGQ} = 800 A		—	—	16	μs
Gate Turn-Off Time	t _{gq}	V _{DM} = 3000 V, T _j = 115°C		—	—	18	μs
Tail Time	t _{tail}	V _D = 2250 V, C _S = 2 μF di _{GQ} / dt = 25 A / μs		—	—	200	μs
Gate Turn-Off Current	I _{GQ}	Off squeeze current ≥ 300 mA		—	—	300	A
Reverse Recovery Charge	Q _{rr}	I _T = 800 A, V _R = 1500 V C _S = 2 μF, R _S = 20 Ω		—	—	2500	μC
Reverse Recovery Time	t _{rr}	di _T / dt = −100 A / μs T _j = 115°C		—	—	10	μs
Thermal Resistance	R _{th (j-f)}	Junction to fin		—	—	0.045	°C / W

